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LETTER AND THE ATTACHED U S NAVY RESPONSE TO THE MINNESOTA POLLUTION CONTROL AGENCY COMMENTS REGARDING THE DRAFT SAMPLING AND ANALYSIS PLAN FOR SOURCE AREA INVESTIGATION REVISION 1 NIROP FRIDLEY MN
06/18/2013
RESOLUTION CONSULTANTS

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June 18, 2013

Ms. Deepa S. A. de Alwis
Minnesota Pollution Control Agency
Superfund Unit 1
Site Remediation and Redevelopment Section
520 Lafayette Road North
St. Paul MN 55155-4194

transimitted via electronic mail

Subject: Response to MPCA Comments on Sampling and Analysis Plan
Naval Indutrial Reserve Ordinance Plant, Fridley, Minnesota

Dear Ms. de Alwis,

Resolution Consultants, on behalf of the Department of the Navy, Naval Facilities Engineering Command Midwest (NAVFAC MW), is providing the enclosed Response to Comments on the Draft Sampling and Analysis Plan, Source Area Investigation, Rev 1, dated March 2013 for the Naval Industrial Reserve Ordiance Plant in Fridely, Minnesota. The Sampling and Analysis Plan will be modified as indicated in the Response to Comments and the revised Sampling and Analysis Plan will be provided to you under separate cover.

If you desire a paper copy of this transmittal or should you have questions regarding this correspondence, please contact Mr. Harvey Pokorny, NAVFAC MW, at (847) 688-2600 ext. 611 or Ms. Chris Boehm Carlson, Resolution Consultants, at (763) 551-2439.

Sincerely yours,

James A. Buss, PG
Project Hydrogeologist

Christina M. Boehm Carlson, PG
CTO Project Manager

cc: Harvey Pokorny, NAVFAC MW
Howard Hickey, NAVFAC MW
Val Jurka, NAVAFAC LANT
Sheila Desai, EPA
Jim Buss, Resolution Consultants
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RESOLUTION CONSULTANTS

Response to MPCA Comments on the NIROP SAP Dated March 2013

NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT

FRIDLEY, MINNESOTA

June 18, 2013

Each MPCA comment on the Sampling and Analysis Plan (SAP) and Navy Reponses is included below. Responses to MPAA comments below include discussion from May 28, 2013 teaming conference call. We would stress the following points:

1. This proposed project is not a continuation of the remedial investigation. The Navy's investigatory obligations have been completed.

2. This is a Navy voluntary action which can be withdrawn at any time.

3. The purpose is to gather data that the Navy requires to fill in data gaps, assist with system optimization and to provide data for internal use.

General Comments:

1. While the plan proposes a significant amount of field work, the scope of work has expanded beyond the initial focus of the source investigation. Seven of the proposed sampling locations appear to be directed at assessing the potential contaminant migration pathways associated with the known BAE source area at the former Paint Shop. The inclusion of the evaluation of potential pathways was not part of the source investigation discussed during the October, 2012 meeting or as stated in the Executive Summary section of this document:

   "The purpose of the project is to delineate the horizontal and vertical extent of source areas contributing to Trichloroethene (TCE) impacts in the groundwater and to collect data needed for designing potential future remedial actions."

   This section continues to describe the areas under the building to be investigated as:

   "Based upon results of previous investigations, the presumed source areas appear to be the east plating room, which will be a primary focus area for this investigation. Secondary source areas to be investigated are AOC-17 in the northwest portion of the building (a former wash rack sump), and the area east and north of monitoring well MS-33I (referred to as 7th and Broadway). These three potential source areas and the associated groundwater flow pathways are the focus of this investigation."

   The Minnesota Pollution Control Agency (MPCA) requests that the Navy maintain the focus of this investigation to be delineation of the source area(s) as agreed to in the past by the three agencies.

   Response: Capture zone and pump test analyses indicate TCE migration in groundwater from the Paint Shop is impacting the extraction wells. Further data is required to refine existing data.

2. Project goals are often restated within the document, which are inconsistent with the above stated purpose. For consistency and to avoid misinterpretation of data at a later time. The MPCA requests that the Navy consistently identify the investigation goals throughout the document as stated in the Executive Summary.

   Response: Goals will be made consistent throughout the document.

3. a) It is rather difficult to conduct a source investigation without clear definition of a source and step in/out criteria. During past team meetings, both the MPCA and U.S. Environmental Protection Agency requested that Navy develop a clear definition of the source and step in/out criterion. Please provide a clear definition of what the Navy considers a source area and how the proposed investigation will delineate the source area(s) with high degree of confidence.

   Response: Source areas targeted for evaluation have been pre-defined as stated in the submitted SAP. Source areas were pre-defined by pre-existing data. The investigation is designed only to step in to known sources to ascertain if areas can be targeted for contaminant reduction.

   b) The MPCA is questioning the number of vertical profiling borings vs. MIP borings, as the vertical profiling would be more expensive. If the Navy can demonstrate that MIP is effective in delineating the extent and magnitude of the source area through confirmation sampling at selected points, it could be a less expensive way to meet the objectives of this investigation and allow for additional delineation points to fill data gaps during the investigation phase. Please consider modifying your approach to allow additional data points or contingency points to successfully meet the purpose of the proposed investigation.

   Response: VOC detection capability of the MIP is not adequate to identify downgradient dissolved phase TCE in groundwater, which is anticipated at a concentration of 1 ppm or less. After reviewing the MIP data and initial vertical profile boring results, up to 5 vertical profile contingency borings will be installed during a separate mobilization to address data gaps identified by the project team.

4. The Navy has indicated the area north and east of the MS-33 wells (7th and Broadway) is a probable source area and has included several sampling locations below the water table in this area. Previous investigations (January 30, 1997 - Dahl and Associates, Inc.) in the vicinity of 7th and Broadway have indicated elevated TCE concentrations in the <u>unsaturated</u> zone to the north and west of MS-33 wells. Based on the previously identified unsaturated zone concentrations the Navy should consider including additional sampling of unsaturated soil and/or MIP probes in the vicinity of 7th and Broadway in order to evaluate all potential sources in this area. Figures in the White Paper document all relevant information in this regard. Where applicable please revise the Quality Assurance Project Plan (QAPP) to address revisions to the sampling plan which address this source area.

Response: Since the majority of the residual TCE impacts appear to be located in fine-grained soil beneath the water table, it is unclear how additional vadose zone data in the 7th and Broadway area would aid in the remedial design. The 1997 borings in the 7th and Broadway area revealed vadose zone TCE concentrations less than 1 mg/kg. Several borings were advanced to the water table identifying no significant shallow impacts. No additional vadose zone borings are planned for the 7th and Broadway area.

Specific Comments:

Executive Summary:

1. **2nd Paragraph, Page I** - For consistency with past investigations and reports, please refer to the "overburden" aquifer as the "unconsolidated drift" aquifer.

   Response: The SAP will be not be revised to use the term "unconsolidated drift" aquifer. "Drift" refers to glacially-transported derived sediments. It can be shown that the NIROP unconsolidated sediments are a mixture of glacially deposited sediments and fluvial terrace channels associated with ancestral Mississippi River high stands. As such, the term "unconsolidated drift" will be stricken from all future communication.

2. **2nd Paragraph, Page I** - Current scientific literature identifies that NAPL presence is indicative where dissolved phase Volatile Organic Compound (VOC) concentrations are in excess of 1 percent of the VOC's solubility limit. The Navy should utilize 1 percent of the solubility limit in evaluation for the presence of NAPL as the current scientific practice.

   Response: The Navy will remove the definition from the SAP.

3. **Bullets on Page II** - Definitions of Operable Unit (OU's) should match those stated in their respective Record of Decision (RODs). OU-1 also includes the aerial extent of groundwater contamination. OU-3 should also specify that it applies only to the former Navy owned property similar to OU2.

   Response: The OU definitions will be revised to match the RODs.

4. **Paragraph following bullets on Page II** - This paragraph should clarify that proposed investigation points outside of the building are not part of NIROP OU3 since the defined boundaries for OU3 apply only to former Navy owned property.

   Response: The OU definitions will be revised to match the RODs.

Acronyms and Abbreviations:

5. Both XSD and HSD are used to define Halogen Specific Detector. Please use consistency in the use of abbreviations throughout the document and revise the document to use only one abbreviation for defined terms.

   Response: The SAP will be revised to consistently refer to consistently use the XSD acronym to refer to the halogen specific detector.

QAPP Worksheets:

6. **Worksheet #1**: Since the U.S. (EPA) Environmental Protection Agency and the MPCA have regulatory oversight for the project; NAVFAC should identify the regulatory contacts that will approve the QAPP.

   Response: The Navy, EPA and MPCA are partners on the NIROP site.

7. **Worksheet #6-3**: Navy should include the notification of the MPCA Project Manager of any analytical data quality issues.

   Response: The Navy will take this request under advisement. Initially, we do not see the need for notification concerning typical data validation issues.

8. **Worksheet #6-4**: Navy should include the notification of the MPCA Project Manager of any non-usable data.

   Response: The Navy will take this request under advisement.

9. **Worksheet #7-1**: Navy should identify the persons who can approve the QAPP and who has the responsibility and authority to stop work on the project. Navy should also identify the person responsible for notifying the regulators when there are problems, corrective actions need to be initiated, schedule changes, etc.
   Response: Information added to the following two lines of Worksheet #7:

Name	Title/Role	Organizational Affiliation	Responsibilities
NAVFAC LANT Chemist	NAVFAC LANT QAO	NAVFAC LANT	SAP approval
Harvey Pokorny	NAVFAC RPM/ Manages project activities for the Navy	NAVFAC Midwest	Primary Point of Contact for the Navy. Oversees project implementation, including scoping, data review, and evaluation, on behalf of the Navy. Will distribute a signed copy of the SAP to all team members. Authority to stop work Notifies regulators of problems that require corrective action, corrective actions that are initiated, and schedule changes

10. **Worksheet #7-1:** Responsibilities of the project personnel. Under MPCA Project Manager, please include: "Represents the interests of MPCA with regard to project expectations and requirements of existing decision documents."

    Response: This text has been added.

11. **Worksheet #8**: Navy did not identify any training or certification requirements for field personnel or the laboratory staff. Navy can reference Appendix B for field Standard Operating Procedure (SOPs) and Appendices C and D for laboratory certification records and SOPs that cover the analytical scope of work for the project.

    Response: Information added as follows:

    Field personnel will follow the field standard operating procedures (SOPs) in Appendix B. Laboratory staff will follow the analytical SOPs in Appendix C. Laboratory certifications are also included in Appendix C.

    There are no other special personnel training required for the execution of field activities under this CTO.

12. **Worksheet #9**: January 2013 Partnering Meeting Action Items - the MPCA is in general agreement with the level of effort proposed, however the number of paired vertical profile sampling points with the proposed MIP sampling points seems to be excessive for comparison purposes.

    Response: The Navy feels the number of borings proposed for this investigation is appropriate to meet the project objectives. The vertical profile borings and the paired MIP will provide high resolution data in the primary source zone to aid in sample depth selection and remedial planning.

13. **Worksheet #10: <u>Conceptual Site Model:</u>**

    a) **10.1 - Bullet No. 3.** - Please provide a brief explanation of how the Navy plans to evaluate if source remediation would accelerate the cleanup timeframe.

       Response: The SAP will be revised to note that evaluation of cleanup time acceleration would be conducted following bench scale testing and be approximate in nature. The degree of acceleration can then be re-assessed once remedial measures are put in place and groundwater quality trends have been evaluated. However, bench-scale testing is not a part of this investigatory phase.

    b) **10.1** - Note that concentrations previously detected at AOC-17 were only found in groundwater indicating a source upgradient from this point. Please explain how the proposed investigation locations will further evaluate and delineate the source of impacts at AOC-17 when none of the proposed locations are up gradient of AOC-17.

       Response: The RI for OU3 contains upgradient soil and shallow groundwater sampling data. The purpose of the AOC-17 boring is to obtain vertical groundwater data in this area and to reassess the current shallow groundwater concentrations. The SAP will be revised to indicate that AOC-17 borings are not intended to delineate this area, but only to provide deeper vertical profile data and to determine if there are impacts between AOC-17 and MS-31.

    c) **10.1** - Please use definitions of site operable unit boundaries consistent with ROD definitions and clarify that investigation points outside of the building may not be applicable by definition to OU3 unless they are on former Navy property.

       Response: The OU definitions will match the ROD definitions.

d) **10.2, Item 3.** - The proposed purpose of the investigation as previously stated does not correspond with this item. The stated goal provides data to evaluate known and suspected Navy source areas, this investigation should be designed to sufficiently address the stated and agreed upon goals related to the Navy obligations before adding additional objectives. The MPCA desires a complete delineation of source areas related to VOC released from the Navy property (i.e., the three areas identified by Navy).

Response: The Navy is concerned with the potential for the BAE Paint Shop impacts to migrate towards NIROP monitoring and extraction wells. Extent of source areas was previously defined. The objective is to step in and more accurately vertically define known source areas; and define contaminant movement as it migrates generally downgradient from known source areas.

e) **10.3.1**, **Bullet No. 4**. - For consistency please use "Shop" instead of "Room" to identify the Paint Shop that is believed to another source area and currently addressed by BAE.

Response: The SAP will be revised as requested.

f) **10.3.1**, **2nd Paragraph** - The Navy has inferred that dense solvent has saturated the fine-grained stratigraphic units. The SAP should include a sampling methodology to evaluate whether fine-grained units are actually solvent saturated or not. This is a key issue with respect to bullet No. 3 under Section 10.1 and in evaluating potential remediation alternatives. The Navy should also consider obtaining soil samples from areas found to contain significant soil impacts for bench testing for remedial alternatives.

Response: The application of MIP testing, coupled with continuous soil sampling and PID screening, will provide adequate field assessment of subsurface soil conditions to enable evaluation of source area remedial options. Provided highly impacted soil and groundwater zones are encountered, samples from both media would be collected. Soil samples for bench scale testing will be collected subsequent to this effort after the data has been evaluated by the project engineer and the need for bench scale testing is confirmed. The analytical data and MIP data can be used to determine if solvent-saturated soil conditions are present. Bench scale testing is beyond the scope of this investigatory phase.

10.5 - The Navy proposes to "model" the MIP data for illustration purposes. The MPCA believes that 3D visual modeling of the primary source area's geology and chemistry data would be extremely helpful in evaluating the extent of source areas and remediation alternatives.

Response: 3-D renditions of the MIP and analytical data will be completed as part of this investigation. Groundwater modeling is outside the scope of this investigation.

g) **10.5.1** - "The MIP results will be used to create a 3-D map" Please clarify whether the Navy is proposing an electronic 3D visual model or simply a fence diagram.

Response: The MIP results will be used to generate an electronic 3-D visualization, not a fence diagram. 2-D cross-sections taken from the model will also be presented in the report.

h) **10.5.2** - Please revise this section to address typos and readability issues.
Please include discussion of unsaturated soil sampling near 7th and Broadway for evaluation related to the redevelopment activities similar to the East Plating Room Area.

Response: The SAP will be revised to address typos and improve readability. The Navy feels that existing RI data and the 1997 7th and Broadway Investigation provide adequate unsaturated soil data in the 7th and Broadway area; and that additional unsaturated soil samples in this area are unnecessary.

10.5.3 - Correlation of MIP data should be a goal of the confirmation VP locations. This correlation should be completed prior to mobilization for installation of the placement of monitoring wells. Monitoring well locations should be selected for their ability to provide accurate evaluation of groundwater conditions in the long term and be based on data from both the MIP and VAP data.

Response: Locations of the permanent monitoring wells will be discussed with the EPA and MPCA prior to their installation and will take into account the MIP and vertical profile results.

13. **QAPP Worksheet #11:**

a) **Bullet No. 1** - Input of the encountered soil stratigraphy and chemistry data into a 3-D visual model would also be helpful in assessing the orientation of low permeability layers relative to the modeled extent of dissolved phase TCE.

Response: The 3-D visualization software can include chemistry data and MIP results. Inclusion of soil Stratigraphy will be evaluated and may be included, if feasible.

b) **11.3 – Bullet No. 3.1** - As noted above, the MPCA believes the Vertical Profile Borings (VPB) will provide valuable information with respect to the vertical extent of VOCs. However, pairing a vertical profile boring with each of the proposed MIP borings seems to be redundant. While duplication is necessary for MIP correlation purposes at several points, the MPCA suggests that the Navy offset the majority of the vertical profile borings to provide greater data collection coverage between the EPR and the MS-33 source areas using MIP, assuming the MIP technology provides acceptable correlation with selected VPBs.

Response: The MIP data will be most useful near the east plating room because the highest concentrations are expected near this area. The MIP will provide high resolution data to help target soil sample locations and aid in the identification of potential NAPL zones. The MIP data will also be used to help refine the remedial evaluation.

c) **11.3 - Bullet No. 3.2** - The MPCA suggests that the SAP address discrete profile soil sampling across fine-grained layers encountered beneath the primary source area to assess the penetration and or saturation of solvent/VOCs in these units.

Response: The SAP will be revised to more clearly state that during the continuous soil sampling performed in the vertical profile borings, care will be taken with PID screening to assess impacts at and within fine grained soil layers. The MIP boring data (initial borings) will also be used to target soil sampling zones. Subsequent selection of analytical samples will be biased toward locations with the highest MIP results. If there is no major difference in the screening results, samples from the upper most portion of the fine grained soil unit(s) will be selected for laboratory analysis.

d) **11.3 - Bullet No. 3.2** - For baseline monitoring purposes, the MPCA suggests that the Navy also consider monitoring selected impacted horizons for manganese, chloride, sulfate and dissolved hydrocarbon gases (i.e., ethene, ethane, and methane) as documented in the NAVFAC presentation on "EZVI Treatment of Chlorinated Solvents", RITS Spring 2009 Conference. Additionally; data collected for these parameters from the OU3 RI could be used for comparison purposes to aid in establishing baseline conditions.

Response: Commented noted. Since these parameters are most effective when collected from monitoring wells, the Navy will consider collecting these parameters from installed monitoring wells closest to the source areas.

e) **11.3 - Bullet No. 3.3** - The MPCA concurs with the proposed unsaturated zone sampling in the primary source area (i.e., EPR). Given the purpose of the SAP, the MPCA requests that the Navy consider completing the proposed soil borings in the unsaturated zone as MIP points or vertical profiling borings with soil profiling and groundwater sampling below water table, to evaluate the potential up gradient presence of VOCs in the saturated horizon in this primary source area. Based on the historical soil sampling results in the area of well nest MS-33 (7th and Broadway Investigation - Dahl, January 1997), VP-17 and VP-18 should include unsaturated zone soil as well as saturated soils or utilize MIP technology.

Response: The Navy feels that there is sufficient unsaturated soil data available in the 7th and Broadway area.

f) **11.5 -** The MPCA Soil Leachate Value (SLV) should also be considered in order to evaluate soil concentrations for the soil to groundwater exposure pathway and soil concentrations as a continuous source of groundwater impacts. This information will be useful in protecting the groundwater if the proposed redevelopment proceeds.

Response: SLVs may be added to Section #11.5 for administrative purposes. However, if proposed redevelopment proceeds, the developer will be responsible for setting cleanup goals independent of this investigation.

g) **11.6 -** Contingency sampling locations should also include consideration of unsaturated soil sampling depending on the selected location and data gaps identified which indicate contingency sampling is necessary.

Response: The SAP will be revised to note that contingency sampling may include unsaturated soil in areas adjacent to the east plating room.

Field Measurements, First bullet - The definitions utilized in this section provide a gap between areas defined as a *minor source area* (>1000 ppm) and a *non-source area* (<500 ppm). In addition, the definition provided for a *Source Area* only describes the maximum concentration (up to 10 ppm) and does not discuss a minimum or a classification for areas (if found) exceeding 10 ppm. Please revise these definitions to clarify specific classifications and provide discussion in Section 11.4 when presenting the study boundaries.

Response: The SAP will be simplified and revised to note that concentrations of TCE may range from greater than 10 ppm in source areas to less than 500 ppb in zones less impacted by TCE. Worksheet 11.6 will include a discussion of these ranges. The Navy deems these definitions to be of secondary importance.

14. **Worksheet #12**: Field duplicates assess both sampling and analytical error. Please revise the Worksheet to reflect this.

Response: A column has been added to Worksheet #12 to indicate the type of error being assessed (sampling, analytical, or both).

15. **Worksheet #12**: Please set performance criteria for lab duplicates (precision), Laboratory Control Sample spike recoveries (accuracy), laboratory method blanks, surrogate spike recoveries (accuracy), and reporting limit verification (sensitivity).

Response: This information has been added.

16. **Worksheet #12**: The MPCA requires spiking of the total analyte list into the Matrix Spike/Matrix Spike Duplicate and the Laboratory Control Samples (see the MPCA Laboratory Quality Control and Data Policy, http://www.pca.state.mn.us/index.php/view-document.html?gid=16288).

    Response: The guidance states that "All target analytes must either be included in the LCS/MS/MSD spiking solution or, for methods that contain a large number of analytes, the lab may vary the spike components so that all target analytes are spiked at some point during the course of a calendar year." For this project, the spiking solution will include all target analytes listed on Worksheet #15 over the life of the project. Control limits will be provided in Appendix C.

17. **Worksheet #12**:

    a) Representativeness can be ensured by the use of Standard Operating Procedures to collect and to analyze the samples,
    b) Performance criteria for comparability need to be defined, and
    c) Performance criteria for completeness need to be defined.

    Response: Information for the above is presented in Worksheet #37 and has been expanded as follows:

- Representativeness — A project scientist, identified by the Resolution Consultants PM and acting on behalf of the Project Team, will determine whether the data are adequately representative of intended populations, both spatially and temporally. This will be accomplished by verifying that samples were collected and analyzed in accordance with this SAP, by reviewing spatial and temporal data variations, and by comparing these characteristics to expectations. The usability report will describe the representativeness of the data for each matrix and analytical fraction. This will not require quantitative comparisons unless professional judgment of the project scientist indicates that a quantitative analysis is required. Verify that standardized SOPs were followed for the collection of field samples and field measurements.

- Comparability — The Project Chemist, acting on behalf of the Project Team, will determine whether the data generated under this project are sufficiently comparable to historical property data generated by different methods and for samples collected using different procedures and under different property conditions. This will not require quantitative comparisons unless the Project Chemist indicates that such quantitative analysis is required. Verify that standardized SOPs were followed for the installation of monitoring wells, collection of field samples, and field measurements.

  MIP results for VOCs will be compared to definitive groundwater and soil results to determine how well the screening procedure can correlate with the definitive results.

- Completeness — The Project Chemist, acting on behalf of the Project Team, will determine whether deviations from the scheduled sample collection or analyses occurred. If they have occurred and the Resolution Consultants PM determines that the deviations compromise the ability to meet project objectives she will consult with the Navy RPM and other project team members, as necessary (determined by the Navy RPM), to develop appropriate corrective actions.

Completeness will be measured by determining the percentage of usable results out of planned results. Usable results are results that have not been rejected during data review and validation. Planned results are all the results that were planned to be reported for the project or a method.

$$\text{Completeness} = \frac{\text{Usable Results} \times 100}{\text{Planned Results}}$$

The completeness goal for samples received at the laboratory for this project is 95%.

The completeness goal for the collection of planned field samples is 80%. It is considered possible that site conditions will prevent the collection of all samples, particularly samples at greater depths.

18. **Worksheet #14: 14.2.1- Bullet No.2**: The MPCA suggests that the SAP address discrete profile soil sampling across fine-grained layers encountered beneath the primary source area to assess the penetration and or saturation of solvents/VOCs in these units.

    Response: The SAP will be revised to more clearly state that during the continuous soil sampling performed in the vertical profile borings, care will be taken with PID screening to assess impacts at and within fine grained soil layers. The collocated MIP borings initially conducted near the east plating room will provide high resolution results across the fine-grained layers to a much greater level of detail than could be obtained with the PID and analytical samples. Selection of analytical samples will be biased toward locations with the highest MIP results.

19. **Worksheet #14: 14.2.1- Bullet No.3:** See comments above under - 11.3 - Bullet No. 3.3.

    Response: The Navy does not feel that additional unsaturated soil samples in the 7th and Broadway area are necessary.

20. **Worksheet #16**: The dates utilized within this table should be revised. Many instances are shown where the deliverable due date falls prior to the completion due date. The Navy should clarify the project timeline throughout this table and where applicable in the SAP.

    Response: The dates will be updated.

21. **Worksheet #17**

    a) **1st Paragraph:** Please specify the concentration the Navy plan to delineate to both vertically and horizontally.
    Response: The primary purpose of this investigation is to collect additional data to aid in the evaluation, selection and design of a source control measure. A significant volume of historic site wide data has been collected and the site wide delineation has been completed in the RI. This investigation is only meant to address data gaps related to source control design. The proposed number of borings and possibly the contingency borings will be utilized to collect additional source area data.

    b) **2nd Paragraph:** The Navy should provide the criteria they will use in determining the need for and placement of step-in/out sampling locations.

Response: The Navy has included up to five contingency borings which may be utilized as step out or step in borings. The initial MIP data and analytical results will be evaluated by the project team to determine if the contingency borings are needed. Any contingency borings will be advanced during a subsequent mobilization after concurrence by the project team.

c) **3rd Paragraph, Bullet No. 1:** The MPCA suggests that the Navy consider reducing the number of paired MIP and VP sampling data points and spread out or offset the proposed vertical profile sampling points to provide a greater data coverage south of the East Plating Room. This would also help to evaluate potential contaminant pathways between the EPR and the MS-33 "source area" where data points are lacking.
Alternatively, if the Navy is uncomfortable with the MIP technology, the MPCA suggests using vertical profile borings instead of the MIP points which would provide eight additional sampling points that could be used to fill data gaps during the course of the field investigation. If this approach is used, the MPCA recommends that the placement of these additional sampling points be determined by the partnering technical team between the first and second site mobilizations.

Response: The MIP borings will provide high resolution data near the source area and will help determine soil and groundwater sample locations with much greater resolution than PID screening alone. The Navy does not see value in spreading out the MIP and vertical profile borings.

d) **17.2.1, 1st Paragraph:** See comment No. 21.

Response: No changes were made regarding this comment.

e) **17.2.1, 2nd Paragraph:** Is the MIP technology compatible with other drilling methods?

Response: MIP is designed for use with Geoprobe direct push technology. Other drilling methods were not explored as part of this SAP.

f) **17.2.2, 1st Paragraph:** See comments No. 24 and 25 regarding the three proposed shallow vadose zone borings. All investigation locations in this section should be re-evaluated considering comments received from U.S. EPA and MPCA.

Response: No changes to the sampling locations will be made at this time.

g) **17.2.2, 1st Paragraph, Bullet No. 8:** Revise typo to state MS-33 wells. Historic groundwater elevation data collected at the NIROP site does not indicate that the MS-33 wells are down gradient of the referenced BAE wells. Additionally, the UD-69D well referenced in this section is not located in the correct position on the figure provided in the SAP. The Navy should revise the figure attached to this SAP to correctly identify the locations of all BAE wells which are referenced.

Response: MS-22 will be corrected to read MS-33. The location of UD-69D will be corrected. MS-33 wells are downgradient from the paint room release.

h) **17.2.2, 3rd paragraph:** See comment No. 13.e.

Response: No changes to the sampling locations will be made at this time.

i) **17.2.2, 5th paragraph:** The MPCA questions the groundwater profile sampling approach proposed by the Navy. Standard practices involve advancing the probe and screened sampling point to the desired sampling depth and then exposing the screen for sample collection. This approach requires tripping out of the borehole and re-advancing the decontaminated screened sampling point to the next proposed vertical sampling interval. This is the preferred method for collecting discrete groundwater samples during vertical profiling. The approach proposed by the Navy allows the screened interval to be dragged upward through the vertical soil profile where the screened interval can become smeared with fines, resulting in poor hydraulic communication with the formation, and the screened interval cannot be decontaminated between subsequent sampling intervals.

Consequently, the Navy cannot ensure that the samples they collect are discrete and representative of the interval being sampled using their sampling approach. The MPCA requests that the Navy reconsider their sampling approach and to use standardized sampling practices.

Response: While the methodology offered by the MPCA and EPA minimizes the potential for cross-contamination, we have found that the methodology presented in the SAP provides a more efficient groundwater sampling program with sufficient quality data for assessment and remedial planning purposes. Given that the data generated during this effort is intended to be used for screening/delineation purposes, we have found the methodology outlined in the SAP is preferable. Given the 80 foot SOW depth and predominance of sandy media throughout the saturated vertical column, the Navy believes this sampling methodology provides adequate purging techniques and is the most efficient means of obtaining samples to total depth. This vertical sampling method has been approved by EPA for use at other Superfund sites.

However, the Navy will consider decontamination of the screen after each sampling point after completing the MIP borings and soil borings. Specifically, the Navy will consider using this method in areas with relatively more fines (silt and clay layers) or areas near the east plating room with relatively higher MIP responses.

j) **17.4 -** Screened intervals selected should be determined by the data collected during this investigation. Screening the wells as intermediate zone wells should be confirmed by data collected and corroborated following evaluation of data by the Technical Team.

Response: The SAP will be revised to indicate that the results of the MIP, vertical profile, and contingency borings will be reviewed and used to identify the horizontal and vertical position of the long term monitoring wells. The proposed vertical and horizontal locations of the wells will then be presented to the project team for their concurrence prior to installation of the wells.

k) **17.4.2 - 1st Paragraph** - Installation of monitoring wells inside a building may require the Navy to obtain a variance to Minn. R. 4725.2175 from the Minnesota Department of Health. Please revise the text in this section to indicate that monitoring wells installed will be compliant with all applicable Minnesota regulations.

Response: The SAP will be revised to note that monitoring well installations will comply with applicable Minnesota regulations.

l) **17.4.2 - Last Paragraph** - Construction of a well with a riser cut below ground surface may not meet the requirements of Minn. R. 4725.6850. Please revise the text in this section to indicate that monitoring wells installed will be compliant with all applicable Minnesota regulations.

Response: The SAP will be revised to note that monitoring well installations will comply with applicable Minnesota regulations and a variance will be requested as needed.

m) **17.5 - 1st Paragraph** - In addition to collecting water levels and groundwater samples from the newly installed monitoring wells, the MPCA would recommend that water levels and groundwater samples be collected concurrently from MS-31I, MS-32I, and MS-33I. This synoptic data would be useful in evaluating the groundwater concentrations relative to the mapped groundwater flow direction across the primary source area.

Response: The SAP will be revised to indicate that during sampling of the new monitoring wells, groundwater elevations will also be concurrently collected from other monitoring wells to be determined at time of sampling. The new wells will be sampled during the 2013 annual monitoring event, if they are installed and developed. If they are not installed and developed by that time, then the new wells will be sampled during a separate sampling event.

22. **Worksheet #24**: Navy should verify that there aren't more analytical instruments that need to be calibrated (TOC, GC/ECD, etc.).

Response: TOC is being analyzed using the Walkley-Black method which is a titration. Other analytical instruments will be added, as needed.

23. **Worksheet #25:** Navy should verify that there aren't more analytical instruments that need to be maintained, tested, and inspected (TOC, GC/ECD, etc.)

Response: TOC is being analyzed using the Walkley-Black method which is a titration. Other analytical instruments will be added, as needed.

24. **Worksheet #32:** If the assessment findings affect data usability, the regulators need to be notified.

Response: See response to items #7 and #8. Worksheet # 6 was revised to indicate that regulators will be notified.